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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,904	04/01/2005	Masashi Ueda	269021US2PCT	5287

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.

1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

MILLER, JR, JOSEPH ALBERT

ART UNIT

PAPER NUMBER

1792

NOTIFICATION DATE

DELIVERY MODE

09/11/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com

oblonpat@oblon.com

jgardner@oblon.com

# Office Action Summary

**Application No.**

10/529,904

**Applicant(s)**

UEDA ET AL.

**Examiner**

JOSEPH MILLER JR

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3-7 and 9-15 is/are pending in the application.
- 4a) Of the above claim(s) 5-6 and 11-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 7, 9 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ueda (WO01/19144, 6,719,876 used as translation).

Ueda teaches using an array of electrodes to perform a film deposition (col 10, line 52- col 11, line 18). Ueda teaches that the electrodes function as antennas (col 5, lines 60-68) because the function of the electrodes meets the definition of an antenna, the electrodes therefore *are* antennas (there is no further definition of "antenna" that would prohibit such interpretation). The electrodes are comprised of two linear conductors (connected by a u-shape) (Figs. 1 and 3), one end ("second end of first linear conductors") of each (15 in Fig. 3) being connected to a high frequency generator (col 6, lines 23-36) and the "second end of the second linear conductors" being commonly grounded (col 11, lines 10-15).

Ueda further teaches multiple substrates arranged between multiple layers of the electrode (i.e. antenna) arrays (col 12, lines 17-64; Figs. 4 and 5) (i.e. "a plurality of substrates on both sides and in parallel to said array antennas").

Regarding the claim limitation that the respective distances between the substrates array antennas and the substrates (are) substantially similar to the intervals,

the word "substantially similar" imparts no measurable metes and bounds on the exact distances, however, it could be argued firstly that, whatever the distances/spaces, they are inherently "substantially similar", secondly, Ueda teaches that the electrodes are formed with the same L2 (col 12, lines 16-40 and col 7, lines 12-51) and depicts (Fig. 5) substrates that are spaced evenly, therefore the fact that the elements (substrates and linear conductors) are spaced evenly would make the defined spacings "substantially similar" in a broad sense of the term.

Note about "substantially": though the MPEP (see MPEPM 2173.05) states that substantially may be a definite term, "It is a broad term."

In alternative, it would have been obvious to someone of ordinary skill in the art at the time of the invention to space the substrates from the arrays at a distance comparable to the spacing between the linear conductors based on the dimensioning of the conductors. The conductors are formed such that their is a distance L2 between conductors based upon the wavelength and frequency applied (col 7, lines 12-55), in order to create a uniform plasma density in the space between the electrodes. Since the arrays are aligned in parallel in the embodiment taught, it would be obvious to carry over this same principal to create a uniform plasma between the electrodes of different arrays, therefore it would be obvious for the distances/spaces named to be comparable.

Regarding claim 7, all elements are taught as described above; additionally, Ueda teaches that such a deposition may be applied to a solar cell (col 4, lines 52-55).

Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as obvious over Ueda (WO01/19144, 6,719,876 used as translation) as applied to claims 1 and 7 above (pertaining to claims 3 and 9, respectively) and in further view of Takagi (WO 01/088221, 2004/0020432 used as translation).

The teachings of Ueda are described above. Ueda teaches the use of a chamber including antenna elements as electrodes used to generate a plasma to deposit a film on multiple substrates, but is silent on the process temperature.

Takagi teaches a plasma CVD apparatus where a number of electrode arrays (as shown in Figure 5; [0060-0063]) are arranged in a determined interval as shown in Figure 6 [0064-0066]. A plurality of substrates (items 11 in Fig. 6) is arranged on both sides and parallel to the electrode.

Takagi teaches an example of depositing an amorphous silicon film for use in a solar cell [0003; 0068-0070]. Takagi teaches an example where a deposition pressure of 1 Pa is used to deposit such a film [0070].

It would have been obvious to someone of ordinary skill in the art at the time of the invention to apply the use of a pressure of 1 Pa (or in that area) to deposit an amorphous silicon film for a solar cell as taught by Takagi to the solar cell deposition method of Ueda as one could apply such a pressure with a reasonable expectation of producing a film that would be viable for use in producing a solar cell. Ueda teaches specific interest in the production of amorphous silicon films (col 1, lines 6-14).

Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as obvious over Ueda (WO01/19144, 6,719,876 used as translation) as applied to claims 1 and 7 above and in further view of Gillery (3,907,660)

Ueda's teachings are described above. Ueda teaches a method of deposition using an array of antenna elements but does not teach putting substrates in a reciprocation motion.

Gillery teaches a deposition method (abstract) where reciprocation of a substrate is used to improve the uniformity of a deposited film (col 4, line 64 – col 5, line 5).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to apply the use of reciprocal motion of a substrate as taught in the deposition method of Gillery with the deposition method of Ueda as it would allow one to improve the uniformity of the deposition (Gillery, citation). Ueda is clearly interested in producing uniform films on the substrates (background art, particularly col 2, lines 4-6, lines 26-29).

Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as obvious over Ueda (WO01/19144, 6,719,876 used as translation) as applied to claims 1 and 7 above and in further view of Nomura (5,993,614)

Ueda's teachings are described above. Ueda teaches a method of deposition using an array of antenna elements but does not teach putting substrates in a reciprocation motion.

Nomura teaches a method of depositing on a large substrate (abstract) using an antenna to generate a plasma (col 8, line 60 and item 112, Fig. 1). Nomura teaches that the substrate may be reciprocating within the chamber to allow deposition of multiple layers in a small chamber when using large substrates (col 20, lines 20-30).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to apply the use of substrate reciprocation as taught by Nomura with the large substrate (Ueda, col 1, lines 10-14) deposition method of Ueda as it would allow for one to coat multiple layers on larger substrates in a given size (small) chamber.

### ***Response to Arguments***

Applicant's arguments filed 07/28/2009 have been fully considered but they are not persuasive. Applicants have overcome 112 rejections and objections by cancellation and amendment.

Applicants have amended claims 1 and 7; examiner has modified previous rejection to the extent that applicant's have amended, but it is noted that the teaching of multiple /plural substrates is still as in the original claims and original rejections. Examiner maintains that the modification of the notation used to describe the distances between the antennas does not patentably change the meaning of the claim or overcome the previously applied art.

For further clarification, Fig. 5 of Ueda particularly depicts multiple substrates on both sides of and in parallel to array antennas. The substrates are items marked 31 and the arrays marked 33, 34, and 35 in that embodiment. The substrates are clearly



on either side and in parallel (as noted in cited text, as well). The distance is addressed as above.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., production of microcrystalline or amorphous silicon) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding applicant arguments over Takagi, arguments are limited to Takagi not curing the purported deficiencies in Ueda and will not be further addressed.

Rejections have been added over claims 4 and 10 as the previous rejections have been removed.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSEPH MILLER JR whose telephone number is (571)270-5825. The examiner can normally be reached on Mon-Thurs, 7am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOSEPH MILLER JR/  
Examiner, Art Unit 1792

/Timothy H Meeks/  
Supervisory Patent Examiner, Art Unit 1792

